

1 A. YES.

2 Q. IS THE LONGLEY-RICE MODEL A MODEL THAT PREDICTS SIGNAL
3 STRENGTH OR INTENSITY AT A PARTICULAR POINT WITH CERTAINTY,
4 OR IS IT A PROBABILISTIC MODEL?

5 A. IT IS STRICTLY A PROBABILISTIC MODEL.

6 Q. NOW, IN CONNECTION WITH THAT ATTRIBUTE OF IT, DO I
7 UNDERSTAND CORRECTLY FROM WHAT'S BEEN TESTIFIED TO
8 PREVIOUSLY IN THIS COURTROOM THAT THE MODEL PERMITS THE USE
9 OF A PARAMETER THAT CAN BE SET TO REFLECT SO-CALLED
10 LOCATIONAL VARIABILITY?

11 A. IT DOES.

12 Q. AND DO I UNDERSTAND FURTHER THAT LOCATIONAL VARIABILITY
13 REFLECTED THE UNCERTAINTY IN SIGNAL, IN THE GENERAL -- WELL,
14 YEAH -- AT GIVEN LOCATIONS, DESPITE THE PREDICTION THAT'S
15 MADE?

16 A. (NO RESPONSE.)

17 Q. LET ME ASK YOU TO TELL ME IN YOUR WORDS INSTEAD OF MY
18 STABBING AT IT --

19 A. THANK YOU.

20 Q. -- WHAT THE LOCATION VARIABILITY REFLECTED?

21 A. WELL, IN MY PERSONAL VIEW, LOCATION VARIABILITY IS WHAT
22 WE CALL THE VARIABILITY THAT'S LEFT AFTER WE TAKE EVERYTHING
23 THAT WE CAN THINK OF TO ACCOUNT FOR, AFTER WE'VE TAKEN
24 EVERYTHING WE CAN IDENTIFY AND HAVE ANY ABILITY TO COMPUTE,
25 YOU'RE STILL GOING TO SEE VARIATIONS IN SIGNAL STRENGTH

1 WITH, AMONGST LOCATIONS THAT ARE OTHERWISE INDISTINGUISHABLE
2 FROM ONE ANOTHER. THAT'S MY DEFINITION OF LOCATION
3 VARIABILITY.

4 Q. ALL RIGHT. AND THIS PHENOMENON IS A SIMILAR PHENOMENON
5 ASSOCIATED WITH TEMPORAL VARIABILITY?

6 A. YES.

7 Q. AND CAN YOU TELL US IN YOUR WORDS WHAT TEMPORAL
8 VARIABILITY REFERS TO?

9 A. TEMPORAL VARIABILITY REFERS TO THE VARIATION OF SIGNAL
10 STRENGTH WITH TIME.

11 Q. AT ANY GIVEN LOCATION?

12 A. IT COULD BE AT A GIVEN LOCATION, OR IT COULD BE AS, FOR
13 INSTANCE, IN CELLULAR TELEPHONE WORK, AS THE -- ONE END OF
14 THE PATH THAT IS IN MOTION.

15 Q. OKAY. AND THE LONGLEY-RICE MODEL THEN RECOGNIZES THE
16 EXISTENCE OF BOTH KINDS OF UNCERTAINTY IN ITS STRUCTURE AND
17 ORGANIZATION?

18 A. YES, WITH A DISTINCTION OR WITH A POINT HERE.
19 LONGLEY-RICE ADDRESSES THE TIME VARIABILITY THAT OCCURS OVER
20 CHANGES OF SEASONS, LONG TERM, MONTHS TO YEARS.

21 THERE IS ANOTHER TYPE OF TIME VARIABILITY THAT WE
22 HAVE TO ADDRESS, AND THAT IS VERY SHORT-TERM VARIATIONS, AS,
23 FOR INSTANCE, WHEN TREE LIMBS BLOW IN THE BREEZE, THAT SORT
24 OF TIME PERIOD.

25 Q. AND DO I UNDERSTAND FROM YOUR ANSWER THAT THE

1 LONGLEY-RICE MODEL DOES NOT TAKE THAT KIND OF --

2 A. LONGLEY-RICE DOES NOT TAKE THE FAST TIME VARIATIONS
3 INTO ACCOUNT.

4 Q. OKAY. NOW, IN ADDITION TO THE TIME AND LOCATION
5 UNCERTAINTIES IN THE LONGLEY-RICE MODEL ITSELF, AND IN
6 ADDITION TO THE UNCERTAINTIES THAT IT DOESN'T TAKE INTO
7 ACCOUNT THAT YOU HAVE JUST TOLD US ABOUT, DOES THE
8 LONGLEY-RICE MODEL CONTAIN A THIRD PARAMETER, AN OVERALL
9 STATISTICAL CONFIDENCE PARAMETER?

10 A. IT DOES.

11 Q. AND THAT'S OVER AND ABOVE THE OTHER TWO PARAMETERS FOR
12 LOCATION AND SPATIAL UNCERTAINTY?

13 A. IN ADDITION TO.

14 Q. -NOW, DO YOU UNDERSTAND FROM BEING IN THE COURTROOM LAST
15 WEEK THAT MR. COHEN, IN DIRECTING THE MAPS BE PREPARED FOR
16 HIS PRESENTATION, UTILIZED 50 PERCENT AS THE SETTING FOR
17 LOCATION ON TEMPORAL AND OVERALL STATISTICAL CONFIDENCE?

18 A. I DO.

19 Q. WE'LL TALK MORE ABOUT THAT LATER, BUT FOR THE MOMENT
20 WHAT I WANT TO ASK YOU IN THIS CONNECTION IS HAVE YOU, WHERE
21 APPROPRIATE, IN YOUR OWN USE OF THIS KIND OF MODELING OF
22 SIGNAL PROPAGATION AND PREDICTION, HAVE YOU MADE YOUR OWN
23 ESTIMATES OF TEMPORAL AND SPATIAL VARIABILITY?

24 A. I HAVE.

25 Q. AND ARE THOSE ESTIMATES EQUIVALENT TO CHOOSING

1 CONTEXT OF THIS WORK BECAUSE, IN THAT CASE, 50 PERCENT OF
2 THE PEOPLE WOULD GET A GIVEN SIGNAL STRENGTH AND 50
3 WOULDN'T.

4 TYP -- EXCUSE ME -- TYPICALLY THE PERCENTAGES OF
5 RELIABILITY IS MY TERM, ARE 70, 90 AND PERHAPS 95.

6 Q. IS IT POSSIBLE TO DO A PREDICTION WITH THIS KIND OF
7 MODEL AND REQUIRE 100 PERCENT CERTAINTY?

8 A. IT'S NOT POSSIBLE.

9 Q. NOW, MR. BIBY, YOU'VE OBVIOUSLY BEEN RETAINED BY
10 PRIMETIME 24 IN THIS CASE.

11 A. YES.

12 Q. AND IN THAT CONNECTION, HAVE YOU REVIEWED THE 1997
13 DECLARATION AND THE 1998 EXPERT REPORT PREPARED BY
14 PLAINTIFFS' EXPERT JULES COHEN?

15 A. I HAVE.

16 Q. IN WHICH HE PRESENTS THE LONGLEY-RICE MAPS THAT WE'VE
17 JUST BEEN DISCUSSING?

18 A. YES.

19 Q. OKAY. NOW, DO YOU UNDERSTAND THAT IN THIS CASE, THE
20 ISSUE OR AN ISSUE HAS BEEN STATED AS BEING WHETHER
21 PRIMETIME 24 IS DELIVERING NETWORK PROGRAMMING TO SO-CALLED
22 INELIGIBLE HOUSEHOLDS UNDER THE SATELLITE HOME VIEWER ACT?

23 A. I'M AWARE OF THAT.

24 Q. OKAY. AND YOU HAVE BEEN TOLD, HAVE YOU NOT, THAT THE
25 STATUTORY DEFINITION OF INELIGIBLE UNDER THAT STATUTE

1 DEFINITION AS YOU THINK IS APPLICABLE TO THIS CASE FOR THE
2 WORD "RECEIVE."

3 THE WITNESS: "RECEIVE: TO CONVERT INCOMING
4 RADIO WAVES INTO PERCEPTIBLE SIGNALS."

5 BY MR. DEUTSCH:

6 Q. AND HAVE YOU FURTHER OPINIONS AS TO THE WHAT THE WORDS
7 "PERCEPTIBLE" AND "SIGNALS" MEAN IN YOUR FIELD?

8 A. YES, FROM THE SAME SOURCE. I FOUND WHAT IN MY VIEW WAS
9 THE ONE PERTINENT DEFINITION ALSO OF THOSE TWO WORDS.

10 "PERCEPTIBLE: CAPABLE OF BEING PERCEIVED,
11 ESPECIALLY BY THE SENSES. SYNONYMS ARE:
12 PERCEPTIBLE, SENSIBLE, PALPABLE, TANGIBLE,
13 APPRECIABLE, PONDERABLE MEANS APPREHENSIBLE AS
14 -REAL OR EXISTENT. PERCEPTIBLE APPLIES TO WHAT CAN
15 BE DISCERNED BY THE SENSES, OFTEN TO A MINIMAL
16 EXTENT. PARENTHETICALLY, A PERCEPTIBLE DIFFERENCE
17 IN SOUND TO A CAREFUL LISTENER."

18 Q. AND "SIGNAL"?

19 A. "SIGNAL: THE SOUND OR IMAGE CONVEYED IN
20 TELEGRAPHY, TELEPHONY, RADIO, RADAR OR TELEVISION;
21 A DETECTABLE PHYSICAL QUANTITY OR IMPULSE,
22 PARENTHETICALLY, SUCH AS A VOLTAGE, CURRENT, OR
23 MAGNETIC FIELD STRENGTH, CLOSE PAREN, BY WHICH
24 MESSAGES OR INFORMATION CAN BE TRANSMITTED."

25 Q. THANK YOU. NOW, AS A BROADCAST ENGINEER OR

1 PROFESSIONAL IN THE FIELD OF BROADCASTING, WHAT, IF
2 ANYTHING, DO YOU UNDERSTAND FROM THIS ABOUT WHETHER THE
3 SATELLITE HOME VIEWER ACT DEFINITION OF ELIGIBILITY THAT
4 WE'VE JUST -- I'VE JUST PUT TO YOU REFERS STRICTLY TO
5 VOLTAGE MEASUREMENT, OR WHETHER IT ALSO RELATES TO THE
6 ABILITY OF THE HOUSEHOLD IN QUESTION TO RECEIVE A VIEWABLE
7 PICTURE?

8 A. I AM FIRM IN MY OPINION THAT THE GOAL IS A PICTURE AND
9 ACCOMPANYING SOUND. AND IF I MAY MAKE A DISTINCTION, IF WE
10 WERE TALKING ABOUT VOLTAGES, I BELIEVE ONE SHOULD DISCUSS
11 QUANTI --

12 THE COURT REPORTER: I'M SORRY?

13 A. THE WORDS, INSTEAD OF "RECEIVE," SHOULD HAVE BEEN
14 SOMETHING SUCH AS "QUANTIFY" OR "MEASURE" INSTEAD OF
15 "RECEIVE."

16 Q. NOW, AS A RESULT OF YOUR PROFESSIONAL EXPERIENCE PRIOR
17 TO THIS CASE, ARE YOU FAMILIAR WITH THE F.C.C.'S DEFINITION
18 OF GRADE B?

19 A. I AM.

20 Q. HAS THE F.C.C. EVER DEFINED GRADE B FOR SATELLITE HOME
21 VIEWER ACT PURPOSES?

22 A. NO.

23 Q. HAS IT DEFINED GRADE B FOR THE PURPOSES OF DETERMINING
24 THE GENERAL AREA COVERAGE OF THE STATION OR A TRANSMITTER --

25 A. YES.

1 Q. -- OVER A COMMUNITY?

2 IN THAT CONTEXT, IS THE FOCUS ON RECEIPT AT ANY
3 PARTICULAR SINGLE LOCATION?

4 A. NO.

5 Q. NOW, IN THE TESTIMONY IN COURT LAST WEEK, WHICH YOU
6 HEARD, DID YOU HEAR TESTIMONY ABOUT WHETHER OR NOT IT WAS
7 POSSIBLE TO INFER ANYTHING ABOUT FIELD STRENGTH FROM PICTURE
8 QUALITY OBSERVATIONS USING HOMEOWNER'S EQUIPMENT?

9 A. YES, I DID.

10 Q. AND, IN PARTICULAR, DID YOU HEAR QUESTIONS ABOUT
11 WHETHER OR NOT IT WAS POSSIBLE TO INFER ANYTHING, WITHOUT
12 KNOWING THE EXACT CHARACTERISTICS OF THE HOMEOWNER'S
13 EQUIPMENT, RECEIVING EQUIPMENT, LIKE AN ANTENNA?

14 A. YES, I DID.

15 Q. OKAY. I'D LIKE TO TALK WITH YOU FOR A MOMENT HOW THE
16 F.C.C. WENT ABOUT DEFINING GRADE B.

17 DO I UNDERSTAND CORRECTLY FROM THE TESTIMONY
18 THAT'S BEEN IN THIS COURT PREVIOUSLY THAT THE F.C.C. BEGAN
19 WITH A DECISION BASED UPON THE RESPONSES OF OBSERVERS ABOUT
20 A DESIRED MINIMUM PICTURE QUALITY?

21 A. THAT'S CORRECT.

22 Q. AND DO I UNDERSTAND FURTHER THAT THE F.C.C. THEN
23 DETERMINED THE RECEIVER INPUT POWER THAT WAS NECESSARY TO
24 PRODUCE THAT PICTURE, ASSUMING SOME TYPICAL CHARACTERISTICS
25 FOR A T.V. RECEIVER THAT MIGHT BE AVAILABLE TO A HOUSEHOLD?

1 WHAT MIGHT BE TYPICAL.

2 Q. AND IS THERE A NAME GIVEN TO THE ESTIMATES THAT THE
3 F.C.C. USED IN DEFINING GRADE B SERVICE?

4 A. YES, PLANNING FACTORS.

5 Q. AND THESE WERE USED TO DEFINE, IF I UNDERSTOOD YOU
6 CORRECTLY THEN, GRADE B SERVICE FOR EVERYONE, ALTHOUGH THEY
7 DID NOT REPRESENT THE SPECIFIC CHARACTERISTICS OF ANY
8 PARTICULAR HOUSEHOLD'S EQUIPMENT?

9 A. YES.

10 Q. NOW, WAS THE PURPOSE OF THE F.C.C.'S EXERCISE IN
11 DEFINING GRADE B SERVICE TO LOCATE STATIONS AND ASSIGN
12 FREQUENCIES TO STATIONS TO MAXIMIZE THE SERVICE THAT WAS
13 GOING TO BE MADE AVAILABLE BY TELEVISION TO U.S.C.
14 COMMUNITIES?

15 A. I'M AFRAID I'M GOING TO HAVE TO ASK YOU TO REPEAT THAT.

16 Q. WAS THE F.C.C.'S PURPOSE IN DEFINING GRADE B TO GIVE IT
17 A MEANS OF LOCATING STATIONS AND ASSIGNING FREQUENCIES SO IT
18 COULD PROVIDE AS MUCH SERVICE AS POSSIBLE TO COMMUNITIES
19 ACROSS THE U.S.?

20 A. I BELIEVE THAT THAT WAS DEFINITELY ONE OF THE GOALS.

21 Q. AND IN TRYING TO PUT AS MANY STATIONS AS POSSIBLE INTO
22 A GIVEN AREA TO PROVIDE AS MUCH SERVICE AS POSSIBLE, WHAT
23 ULTIMATE LIMITATION IS FACED?

24 A. IN ORDER TO UTILIZE A RATHER SMALL NUMBER OF CHANNELS,
25 12 IN THE CASE AT HAND, IN AN ATTEMPT TO PROVIDE MULTIPLE

1 DETERMINING COVERAGE?

2 A. YES.

3 Q. AND INTERFERENCE IS A LIMITING FACTOR, IS IT NOT -- OR
4 STRIKE THAT.

5 DO I UNDERSTAND CORRECTLY FROM WHAT YOU HAVE SAID
6 THAT INTERFERENCE IS A LIMITING FACTOR FOR MANY HOUSEHOLDS
7 IN DETERMINING WHETHER OR NOT THEY CAN GET AN ACCEPTABLE
8 PICTURE, EVEN WITH PERFECT EQUIPMENT AT THE HOMEOWNER'S
9 SITE?

10 A. I'M GOING TO SAY, IN GENERAL, NO, TO THAT QUESTION,
11 BECAUSE THE COMMISSION LONG AGO PUT INTO PLACE SAFEGUARDS
12 AGAINST INTERFERENCE WITHIN THE, I'M GONNA SAY, NOMINAL
13 SERVICE CONTOUR OF EACH STATION.

14 Q. -OKAY. SO IT'S AVOIDING THAT, THAT IS, THE LIMITATION
15 ON STATIONS' SITING AND POWER?

16 A. YES.

17 Q. NOW, IN DETERMINING THE SIGNAL INTENSITY NECESSARY TO
18 PRODUCE AN ACCEPTABLE PICTURE WHEN IT DID SO, AND, THUS, IN
19 DEFINING GRADE B AND GRADE A, DID THE F.C.C., IN ITS
20 SO-CALLED PLANNING FACTORS, HAVE TO CONSIDER THE EFFECT OF
21 ENVIRONMENTAL NOISE AND DEGRADING OF PICTURE?

22 A. YES.

23 Q. AND CAN YOU TELL US WHAT ENVIRONMENTAL NOISE REFERS TO
24 IN THIS CONTEXT?

25 A. OH, IT REFERS TO INTERFERENCE FROM ELECTRICAL

1 APPARATUS. FLUORESCENT LIGHTS ARE A NOTORIOUS SOURCE OF
2 SUCH NOISE. ELECTRICAL MOTORS, ANY --

3 Q. FANS, HAIR DRYERS?

4 A. THE WORLD OF ELECTRICAL DEVICES.

5 Q. AND OTHER THINGS BEING EQUAL, DOES ONE NEED A STRONGER
6 SIGNAL IF THERE'S MORE NOISE IN ORDER TO OVERCOME THE NOISE
7 AND GET AN ACCEPTABLE PICTURE?

8 A. YES.

9 Q. IS THAT ANALOGOUS TO MEANING TO SHOUT LOUDER TO BE
10 HEARD IF THERE'S A BACKGROUND ACOUSTIC NOISE?

11 A. YES, INDEED.

12 Q. NOW, IN THE 1950'S, WHEN THE F.C.C. CARRIED OUT THE
13 EXERCISE, WHAT ASSUMPTION ABOUT RURAL NOISE DID THE F.C.C.
14 MAKE IN DEFINING GRADE B?

15 A. THEY ASSUMED THAT IT WAS NOT A FACTOR. IN OTHER WORDS,
16 THEY ASSIGNED A VALUE OF ZERO TO IT.

17 Q. OKAY. AND HAVE THERE BEEN CHANGES IN THE U.S.
18 POPULATION DISTRIBUTION AND, IF YOU WILL, STYLE OF LIFE
19 SINCE THOSE DAYS?

20 A. YES. IN THE DECADES SINCE THE LATE 1940'S, 1950'S,
21 THERE'S BEEN A SIGNIFICANT SHIFT OF POPULATION FROM CITIES
22 TO SUBURBAN AND EX-URBAN AREAS.

23 Q. AND HAS THAT HAD AN IMPACT ON THE NOISE LEVELS THAT
24 HOMEOWNERS IN THOSE AREAS NEED TO CONTEND WITH IN ATTEMPTING
25 TO RECEIVE T.V. PROGRAMMING?

1 ASSUMPTION OF 0 D.B. TO OVERCOME RURAL NOISE IN
2 THESE, QUOTE, 'RURAL AREAS,' END QUOTE, IS
3 PROBABLY NO LONGER VALID BECAUSE OF THE INCREASED
4 NUMBER OF HIGH VOLTAGE POWER LINES AND MOTOR
5 TRAFFIC VOLUME."

6 HE GOES ON TO NOTE THAT THE F.C.C. ENGINEERING
7 STAFF'S OWN STUDY INDICATED AN INCREASE IN MAN-MADE NOISE IN
8 THESE RURAL AREAS TO 14 DECIBELS ON CHANNEL 3.

9 AND HE ALSO QUOTES THE WORK OF AN INTERNATIONAL
10 ENTITY KNOWN AS THE C.C.I.R., OF WHERE THEY REPORTED 15 TO
11 20 DECIBELS FOR LOW V.H.F. AND FIVE TO TEN DECIBELS AT HIGH
12 V.H.F.

13 Q. AND IS THE OBSERVATION OF MR. KALAJIAN CONSISTENT WITH
14 YOUR-OWN UNDERSTANDING IN THE FIELD?

15 A. IT IS.

16 Q. AND THIS DOCUMENT, JUST FOR THE RECORD, IS CALLED "A
17 REVIEW OF THE TECHNICAL PLANNING FACTORS FOR V.H.F.
18 TELEVISION SERVICE, BY GARY S. KALAJIAN, OF THE OFFICE OF
19 CHIEF ENGINEER, RESEARCH AND STANDARDS DIVISION OF THE
20 FEDERAL COMMUNICATIONS COMMISSION" DATED MARCH 1ST, 1977, IS
21 THAT RIGHT?

22 A. YES.

23 Q. I'D LIKE TO TURN BACK TO THE SUBJECT OF SIGNAL
24 VARIABILITY THAT WE TALKED ABOUT A LITTLE BIT EARLIER IN
25 DISCUSSING, AT THAT POINT, JUST THE PARAMETERS FOR THE

1 THE SIGNALS WITH A COMPUTER. AND YOU TAKE ENOUGH SAMPLES
2 THAT YOU CAN GET A GOOD SOLID PICTURE OF THE VARIABILITY.

3 MR. COHEN, OVER HIS 100-FOOT RUN, STATED HE
4 TYPICALLY TAKES IN EXCESS OF A THOUSAND SUCH SAMPLES.

5 THE COURT: I HAVE GOTTEN A LITTLE EMERGENCY
6 MESSAGE HERE I HAVE TO TAKE. SO YOU JUST SIT BACK DOWN
7 AGAIN. I'LL JUST BE -- THE CHIEF JUDGE WANTS TO SPEAK TO ME
8 JUST FOR A MOMENT. I'LL BE RIGHT BACK.

9 (PAUSE.)

10 THE COURT: OKAY. YOU CAN PROCEED NOW.

11 ARE YOU FINISHED AT THE PAD OR NOT, MR. BIBY?

12 THE WITNESS: NOT QUITE, YOUR HONOR.

13 THE COURT: ALL RIGHT. WELL, THEN STEP DOWN
14 AGAIN, PLEASE.

15 THE WITNESS: WHAT I'VE TRIED TO INDICATE IS THE
16 ENORMOUS VARIABILITY THAT ONE SEES AS YOU MOVE ALONG.

17 THIS HORIZONTAL LINE IS THE MEDIAN VALUE, SO
18 RELATIVE TO THE MEDIAN, THERE IS A ZERO DECIBELS. ABOVE THE
19 MEDIAN LINE I HAVE INDICATED PLUS TEN DECIBELS. YOU'LL NOTE
20 THAT SELDOM, IF EVER, DOES THE SIGNAL GO AS MUCH AS TEN
21 DECIBELS ABOVE THE MEDIAN.

22 I'VE INDICATED MINUS TEN, MY TWENTY, MINUS THIRTY
23 DECIBELS BELOW THE MEDIAN. YOU WILL NOTE THAT RATHER
24 FREQUENTLY THE SIGNAL GOES MUCH FURTHER BELOW THE MEDIAN
25 THAN ABOVE THE MEDIAN. IN OTHER WORDS, THE SIGNAL IS HIGHLY

1 OCCURRING?

2 A. TYPICALLY YOU SEE TWO MINIMA AND TWO MAXIMA PER
3 WAVELENGTH; WHICH AT THE LOW V.H.F. CHANNEL 2, I BELIEVE, IS
4 30 OR 40 FEET; AND AT HIGH U.H.F. FREQUENCIES A FOOT OR SO.

5 Q. NOW, ARE THESE VARIATIONS DUE TO THE EFFECTS OF TERRAIN
6 OR DO THEY OCCUR EVEN IN THE PRESENCE OF UNIFORM TERRAIN?

7 A. THEY ARE NOT DUE TO TERRAIN. THEY'RE DUE TO SCATTER
8 FROM OBJECTS SUCH AS TREES -- WELL, CARS, BUILDINGS.

9 Q. AND IS THIS WHAT WE'VE TALKED ABOUT AS SPATIAL
10 VARIABILITY PREVIOUSLY OR LOCATIONAL VARIABILITY?

11 A. NO, IT'S NOT LOCATION VARIABILITY. LOCATION
12 VARIABILITY TYPICALLY OR IS OVER A SOMEWHAT LARGER AREA.
13 THESE ARE VERY FINE DETAIL VARIATIONS, AS I COMMENTED, CAN
14 TAKE PLACE IN A MATTER OF INCHES AT U.H.F. FREQUENCIES.

15 Q. OKAY. SO ARE THESE VARIABILITIES IN SPATIAL TAKEN INTO
16 ACCOUNT IN LONGLEY-RICE MODELING?

17 A. THEY ARE NOT.

18 Q. NOW, IF INSTEAD OF MOVING ALONG A PATH MEASURING ONE
19 STOOD STOCKSTILL AT ONE PLACE, BUT KEPT THE SIGNAL MEASURER
20 ON AND MADE INSTEAD OF A 20 OR 40 OR HUNDRED OR 200-FOOT
21 RUN, MADE A ZERO FOOT RUN OVER SOME PERIOD OF TIME, THEN
22 WHAT WOULD THE SIGNAL THAT YOU TRACED LOOK LIKE?

23 A. THESE VARIATIONS WILL COME TO YOU, SO TO SPEAK. THEY
24 WILL OCCUR IN TIME FROM A FIXED RECEIVING LOCATION.

25 Q. SO DO I UNDERSTAND THEN THAT THE SCHEMATIC DRAWING

1 YOU'VE MARKED HERE ON THE PAD WOULD OCCUR -- AGAIN,
2 SCHEMATICALLY, RATHER THAN BEING SPECIFIC TO A LOCATION --
3 BUT A PATTERN LIKE THIS WOULD OCCUR IF YOU STOOD STILL
4 RATHER THAN MOVED, BUT WERE RECORDING WHILE YOU WERE
5 STANDING STILL?

6 A. YES.

7 Q. AND IS THIS A KIND OF TEMPORAL VARIABILITY?

8 A. IT IS.

9 Q. AND WHAT CAUSES THIS?

10 A. VEHICLES MOVING, VEHICLES MOVING, EVEN TREE LIMBS AND
11 LEAVES BLOWING IN THE BREEZE, JUST ANY NUMBER OF CHANGES.

12 Q. AND DO THE LONGLEY-RICE MODEL TAKE INTO ACCOUNT THIS
13 KIND OF TIME VARIABILITY?

14 A. -IT DOES NOT.

15 MR. DEUTSCH: I'M GOING TO REFER THE WITNESS NOW
16 TO A PREVIOUSLY ADMITTED DOCUMENT, PLAINTIFFS' EXHIBIT 343.
17 BY MR. DEUTSCH:

18 Q. NOW, MR. BIBY, I HAVE SHOWN YOU WHAT'S PREVIOUSLY BEEN
19 ADMITTED BY THE PLAINTIFFS AS THEIR EXHIBIT 343. AND I'D
20 LIKE YOU TO TELL ME IF YOU UNDERSTAND THAT THIS IS PRESENTED
21 BY THE PLAINTIFFS WITH THE RESULTS OF MEASUREMENTS MADE AND
22 PRESENTED TO THE COURT BY JULES COHEN?

23 A. YES, I UNDERSTAND THAT.

24 Q. AND, IN PARTICULAR, THIS EXHIBIT REPRESENTS
25 MEASUREMENTS MADE FOR CHANNEL 53 IN PITTSBURGH,

1 A. 10.4 DECIBELS.

2 Q. AND HOW FAR BELOW THE MEDIAN IS THE MINIMUM?

3 A. YOU'RE STRAINING MY OFFHAND ARITHMETIC CAPABILITIES. I
4 BELIEVE IT'S 24 -- 23.9, I BELIEVE.

5 Q. AND DOES THIS ILLUSTRATE THE SAME VARIABILITY THEN THAT
6 YOU HAVE BEEN TALKING ABOUT?

7 A. YES, SIR, VERY TYPICAL DATA.

8 Q. NOW, WERE YOU IN THE COURTROOM WHEN MR. COHEN
9 ACKNOWLEDGED THAT THERE COULD BE SIGNIFICANT VARIATIONS IN
10 SIGNAL STRENGTH OVER THE COURSE OF A DATA RUN?

11 A. YES, I WAS.

12 Q. AND DOES THE DATA HE'S PRESENTED ILLUSTRATE THOSE
13 VARIATIONS, IN YOUR OPINION?

14 A. YES, INDEED.

15 Q. NOW, ARE THE VARIATIONS IN THIS EXHIBIT DUE TO TIME
16 VARIABILITY OR ARE THEY DUE TO SPATIAL VARIABILITY OR ARE
17 THEY DUE TO A COMBINATION OF THE TWO?

18 A. I SMILE BECAUSE IT ILLUSTRATES THE DIFFICULTIES ONE HAS
19 IN DOING THIS SORT OF WORK. BOTH, THERE'S TIME VARIABILITY
20 WITHOUT DOUBT AND THERE'S LOCATION VARIABILITY.

21 Q. NOW, FOR ANY GIVEN RUN WHERE MR. COHEN REPORTS THE
22 SIGNAL AS BEING ABOVE THE GRADE B CUTOFF, BASED UPON WHAT HE
23 DEFINED AS ADJUSTED VALUE FOR THE MOMENT -- OKAY?

24 A. YES.

25 Q. IN REVIEWING THE DATA HE PRESENTS, CAN THE SIGNAL IN

1 WEDNESDAY, AUGUST 19, 1998, 2:40 P.M.

2 THE COURT: ALL RIGHT. BE SEATED.

3 NOW, BEFORE WE GET STARTED THIS AFTERNOON, NOW, AS
4 THIS COURT HAS HELD TWICE, MR. DEUTSCH, THE LEGISLATIVE
5 HISTORY OF 47 C.F.R. SECTION 73.683(A), A REGULATION WHICH
6 DEFINES FIELD STRENGTH CONTOURS, HAS BEEN ESSENTIALLY
7 ADOPTED BY THE F.C.C. AND THEN EVEN THOUGH THAT SECTION WAS
8 DRAFTED WITH OTHER PURPOSES IN MIND, AS YOU POINTED OUT,
9 THAT S.H.V.A. WAS NOT DIRECTLY CONSIDERED AT THE TIME,
10 CONGRESS CAN ADOPT A CODE REFERENCE, IN WHOLE OR IN PART, OF
11 THE FEDERAL REGULATIONS WHICH IT CONSIDERS RELEVANT, AND TO
12 WIT, IT HAS DONE.

13 AND SO IN THIS PARTICULAR CASE, THE F.C.C. HAS
14 HELD-THAT AN OVER-THE-AIR SIGNAL OF GRADE B INTENSITY, AS
15 DEFINED BY THE F.C.C., IS AN OBJECTIVE TEST BASED ON SIGNAL
16 INTENSITIES AS DEFINED BY THE F.C.C. IN ITS REGULATION
17 SETTING FORTH GRADE B INTENSITY LEVELS, 47 C.F.R.
18 SECTION 73.683. THAT COMES NOT ONLY FROM THE REPORT AND
19 RECOMMENDATION, BUT MY ORDER ON PAGES 16 THROUGH 18.

20 NOW, ARE YOU JUST RE-ARGUING THIS POINT ALL OVER
21 AGAIN, MR. DEUTSCH? I MEAN IT WOULD HAVE BEEN NICE IF THIS
22 ARGUMENT HAD BEEN PRESENTED TO THE F.C.C., BUT IT WASN'T.
23 AND IF IT WAS, IT WAS REJECTED. AND THEY HAVE USED THIS
24 OVER-THE-AIR GRADE SIGNAL OF GRADE B INTENSITY AS A PROPER
25 METHOD BY WHICH THE CASE -- THE GUIDELINES FOR DETERMINING

1 REGULATIONS, WOULD DISENFRANCHISE HOMEOWNERS WHO, IN FACT,
2 CAN'T GET A SIGNAL OF GRADE B INTENSITY MEASURED OBJECTIVELY
3 WITH THEIR ANTENNAS OVER THEIR HOUSES.

4 THE COURT: WELL, BUT THE F.C.C. HAD ACKNOWLEDGED
5 IN ITS REGULATIONS THAT TRUE COVERAGE OR SIGNAL STRENGTH
6 WILL VARY, AND THAT THERE ARE LIMITATIONS REGARDING THE
7 VARIABLES OF A GRADE A AND GRADE B SIGNAL.

8 47 C.F.R. 73.684 STATES THAT:

9 "ALL PREDICTIONS OF COVERAGE SHALL BE MADE
10 WITHOUT REGARD TO INTERFERENCE AND SHALL BE MADE
11 ONLY ON THE ESTIMATED FIELD STRENGTH."

12 YOU KNOW, MAYBE THIS WASN'T THE BEST METHOD, THE
13 GRADE B SIGNAL, BUT I WOULD NEED TO KNOW EXACTLY WHERE I AM
14 WRONG IN MY INTERPRETATION OF WHAT THE F.C.C. HAS SAID THEIR
15 INTERPRETATION OF A GRADE B INTENSITY SIGNAL IS. THAT'S
16 WHAT I WANT YOU TO TARGET IN ON.

17 I MEAN THIS WOULD BE WONDERFUL TO HEAR FROM THIS
18 WITNESS IF I WERE STARTING WITH A CLEAN SLATE AND THE F.C.C.
19 HADN'T FOLLOWED CERTAIN REGULATIONS AND IF S.H.V.A. WAS
20 CONSIDERING -- OR CONGRESS WAS CONSIDERING HOW TO INTERPRET
21 S.H.V.A. BUT I NEED TO KNOW WHY MY INTERPRETATION AND JUDGE
22 BULLOCK'S INTERPRETATION AND THE MAGISTRATE'S INTERPRETATION
23 IS WRONG.

24 MR. OLSON: YOUR HONOR, WE HAD ACTUALLY
25 UNDERSTOOD, BASED ON THE COURT'S COMMENTS AT THE PRETRIAL

1 IT'S KNOWN AS VERSION 1.2.2 -- WHICH DID NOT TAKE INTO
2 ACCOUNT WHAT, IN MY VIEW, IS AN EXTREMELY IMPORTANT FACTOR,
3 THAT BEING THE EFFECTS OF BUILDINGS AND VEGETATION CLUTTER.

4 SO I BELIEVE THE QUESTION BEFORE ME IS DO I FEEL
5 THAT LONGLEY-RICE, AS USED BY JULES COHEN, IS A RELIABLE
6 PREDICTIVE TOOL? MY ANSWER IS NO, I DO NOT.

7 Q. THANK YOU.

8 NOW, FOR LONGLEY-RICE PROBABILITY MAPS OF THE KIND
9 THAT MR. COHEN PRESENTED, ARE THE CALCULATIONS ON WHICH THE
10 COLORING OF THOSE MAPS ARE BASED DONE BASED UPON
11 CALCULATIONS OF SINGLE POINTS INSIDE CELLS?

12 A. THAT'S MY UNDERSTANDING FROM HIS TESTIMONY.

13 Q. WOULD THE ENTIRE CELL ASSIGNED THE SAME RESULT AS THE
14 ONE CALCULATION POINT THAT'S MADE IN THE CELL?

15 A. MY INTERPRETATION OF YOUR TERM "CELL" IS THE RECTANGLE
16 TO WHICH MR. COHEN ALLUDED, HE CHARACTERIZES AS BEING
17 ROUGHLY 800 METERS ON A SIDE. WITH THAT INTERPRETATION,
18 YES, IT'S MY UNDERSTANDING THAT ONLY A SINGLE PREDICTION WAS
19 DONE IN EACH SUCH CELL.

20 Q. MR. BIBY, IF YOU -- AM I HEARD -- IF ONE LOOKS AT THIS
21 SKETCH AS DIVIDING AN AREA INTO CELLS WITH THESE DASHED
22 HORIZONTAL AND VERTICAL LINES DEFINING THE BOUNDARIES OF THE
23 CELL, AND IF ONE LOOKS AT THESE DOTS IN THE MIDDLE OF THE
24 CELLS AS POINTS WHERE THE CALCULATIONS ARE MADE, IS THAT A
25 CORRECT PICTURE OF THE GEOMETRY AS YOU UNDERSTAND IT,

1 GENERALLY, THAT WAS FOLLOWED IN THOSE JULES COHEN MAPS?

2 A. YES.

3 Q. AND THE DISTANCE BETWEEN TWO MEASUREMENTS WAS ON THE
4 ORDER OF 800 METERS OR EIGHT-TENTHS OF A KILOMETER?

5 A. CORRECT.

6 Q. NOW, MR. BIBY, DO I ALSO UNDERSTAND CORRECTLY THAT THE
7 CALCULATION MADE AT THE CENTER OF EACH CELL WAS THEN THE
8 RESULT ASSIGNED TO THE ENTIRE AREA WITHIN THE CELL?

9 A. THAT'S MY UNDERSTANDING OF MR. COHEN'S TESTIMONY, YES.

10 Q. IN FACT, WOULD IT BE POSSIBLE FOR THERE TO BE A
11 VARIATION SUCH THAT ALTHOUGH THE CENTER OF THE CELL WAS
12 ABOVE GRADE B, OTHER AREAS IN THE CELL, IN FACT, WERE BELOW
13 GRADE B?

14 A. I BELIEVE YOU USED THE WORD "POSSIBLY." I CAN
15 VIRTUALLY GUARANTEE THAT THAT WOULD BE THE CASE BECAUSE THE
16 LOCATION VARIABILITY THAT WE HAVE DISCUSSED.

17 Q. SO THAT EVEN THOUGH MR. COHEN'S MAPS ARE SHOWN WITH
18 CELLS ENTIRELY COLORED YELLOW, IS IT YOUR TESTIMONY THEN
19 THAT THERE WOULD, IN FACT, BE WITHIN THE CELLS AREAS OF
20 WHITE, THAT IS TO SAY, AREAS WHERE THE SIGNAL WOULD BE BELOW
21 GRADE B INTENSITY?

22 A. CORRECT.

23 Q. NOW, IF WE ASSUME HOUSES ARE SPACED A HUNDRED FEET
24 APART, CAN YOU TELL ME HOW MANY HOUSES WOULD FIT AROUND THE
25 EDGE OF THE PARAMETER OF ONE OF THOSE CELLS THAT MR. COHEN

1 GRADE B.

2 Q. NOW, IN YOUR EXPERIENCE AS AN ENGINEER, BY HOW MUCH CAN
3 A SIGNAL VARY OVER THE DISTANCE BETWEEN CALCULATIONS AS DONE
4 BY MR. COHEN? THAT IS, HOW MUCH CAN A SIGNAL VARY OVER
5 EIGHT-TENTHS OF A KILOMETER?

6 A. IN MY FORMAL WRITTEN FILINGS, I DISCUSSED THE PROBABLE
7 EXTENT OF LOCATION VARIABILITY RATHER EXTENSIVELY. AND IT
8 DOES DEPEND ON FREQUENCY, CHANNEL, TERRAIN ROUGHNESS, THE
9 TYPE OF VEGETATION, TYPE OF HOUSING CLUTTER. I CAN GIVE YOU
10 VERY GENERAL GUESSES. USUALLY ON THE ORDER OF 20 DECIBELS.

11 Q. NOW, WE'VE DISCUSSED HERE LOCATIONAL VARIABILITY, THE
12 UNCERTAINTY ABOUT SIGNAL STRENGTH AT A PARTICULAR LOCATION
13 AWAY FROM WHERE THE LOCATION IS OR AS ONE MOVES. I WANT TO
14 ASK YOU A QUESTION NOW ABOUT TEMPORAL VARIABILITY AS IT
15 RELATES TO THESE MAPS.

16 DO YOU RECALL MR. COHEN ACKNOWLEDGING THAT AT A
17 LOCATION WHERE THERE WAS A 90 PERCENT LIKELIHOOD OF
18 RECEIVING A SIGNAL OF GRADE B OR GREATER THAT THE VIEWER
19 WOULD BE UNABLE TO GET THE SATISFACTORY SIGNAL TEN PERCENT
20 OF THE TIME, THAT IS, 2.4 HOURS IN 24? DO YOU RECALL THAT
21 TESTIMONY?

22 A. I RECALL THE TESTIMONY REGARDING TEN PERCENT. I DON'T
23 RECALL IF MR. COHEN REALLY SAID 2.4 HOURS OUT OF 24. I'VE
24 KNOWN MR. COHEN FOR 30 YEARS, AND I KNOW THAT HE KNOWS THESE
25 VARIATIONS MAY SPAN LONGER TIME PERIODS THAN 24 HOURS. SO

1 THAT WAS NOT -- HE DID DISCUSS THE 90 PERCENT VARIABILITY,
2 OR TIME AVAILABILITY FACTOR, YES.

3 Q. SO, IN OTHER WORDS, YOU MAY HAVE SOME DAYS
4 CONSECUTIVELY YOU GET MORE THAN 90 PERCENT, AND THEN A BUNCH
5 OF DAYS CONSECUTIVELY WHERE YOU HAVE LESS THAN 90 PERCENT?

6 A. EXACTLY. THE OUTAGE MAY EXTEND FOR DAYS OR IT MAY
7 EXTEND FOR SECONDS.

8 Q. AND IF ONE CONCEPTUALIZES THERE BEING A HUNDRED HOUSES
9 IN ONE OF THESE CELLS, AT WHICH 50 ACTUALLY HAVE A GRADE B
10 OR BETTER SIGNAL, EVEN IF THOSE HOUSES THAT ARE AMONG THE 50
11 PERCENT THAT HAVE THE GRADE B OR GREATER SIGNAL, IT'S TRUE
12 THAT AT THOSE HOUSES THERE WOULD BE A LACK OF SIGNAL UP TO
13 TEN PERCENT OF THE TIME BECAUSE OF THE TEMPORAL VARIATION?

14 A. WE'RE ADDRESSING THOSE AMONG THIS 100 HOUSES?

15 Q. YES.

16 A. THE ANSWER IS YES.

17 Q. NOW, ARE YOU FAMILIAR WITH THE O.E.T. BULLETIN 69 THAT
18 HAS BEEN MARKED AS PLAINTIFFS' EXHIBIT 333? LET ME SHOW IT
19 TO YOU.

20 A. I AM.

21 Q. AND HAVE YOU HEARD TESTIMONY LAST WEEK IN REGARD TO
22 THAT WHEN MR. COHEN WAS TESTIFYING?

23 A. YES.

24 Q. WHAT IS THE PURPOSE OR -- FIRST OF ALL, ARE YOU
25 FAMILIAR -- STRIKE THAT.

1 A. NO. I BELIEVE MR. COHEN'S MAPS WERE NOT APPROPRIATE
2 FOR THAT PURPOSE.

3 Q. NOW, WHAT I'D LIKE YOU TO DO IS ENUMERATE FOR US, IF
4 YOU COULD, THE -- WHATEVER NUMBER OF SHORTCOMINGS YOU
5 BELIEVE THE MAPS HAVE AND THE MANNER IN WHICH HE USED THEM.

6 A. IF YOU WILL PARDON ME FOR REFERRING TO SOME NOTES, I AM
7 NOT GOOD AT REMEMBERING A NUMBER OF ITEMS. BUT THE FIRST
8 ITEM THAT COMES TO MIND IS MR. COHEN'S MAPPINGS DID NOT
9 CONSIDER THE POSSIBILITY OF INTERFERENCE TO THE SIGNAL.
10 THIS IS PARTICULARLY IMPORTANT IN THOSE CASES WHICH WERE
11 FREQUENT AMONG HIS MAPS SET WHERE HIS DEPICTED GRADE B
12 SIGNALS WENT FAR BEYOND THE F.C.C.'S GRADE B CONTOUR.

13 AND AS I HAVE DISCUSSED, MANY, I WOULD EVEN SAY
14 MOST OF THE CHANNEL ASSIGNMENTS WERE PURPOSELY SO STRUCTURED
15 AS TO PERMIT INTERFERENCE UP TO TANGENTIAL, TO THE GRADE B
16 CONTOUR. SO HIS FAILURE TO CONSIDER INTERFERENCE FROM OTHER
17 TELEVISION STATIONS CONCERNS ME GREATLY.

18 Q. OKAY. COULD YOU TELL US WHAT THE NEXT OF THE ELEMENTS
19 THAT YOU BELIEVE CONCERN YOUR --

20 A. WELL, HE FAILED TO CONSIDER LOCATION VARIABILITY WHEN
21 HE PUT IN THE 50 PERCENT LOCATION PARAMETER, THAT IS TO SAY,
22 TO THE COMPUTER PROGRAM, IGNORE LOCATION VARIABILITY.

23 THE SAME COMMENT GOES TO TEMPORAL OR TIME
24 VARIABILITY, HE INSTRUCTED THE PROGRAM TO IGNORE THAT
25 FACTOR.

1 HE DID NOT TAKE INTO ACCOUNT THE EFFECTS OF TREES
2 AND BUILDINGS UPON THE SIGNAL, EVEN THOUGH THOSE THINGS --
3 THE TECH -- OR THE TERM FOR BUILDINGS AND VEGETATION IS
4 MORPHOLOGY. IT HAS BEEN KNOWN SINCE THE EARLY DAYS OF THE
5 USE OF RADIO WAVES THAT MORPHOLOGY HAS A SIGNIFICANT EFFECT,
6 OR CAN HAVE A SIGNIFICANT EFFECT, ON THE RECEIVED STRENGTH
7 OF SIGNALS.

8 AND LAST AND LEAST ON THE ORDER OF IMPORTANCE IS
9 MR. COHEN USED A 30-FOOT ANTENNA HEIGHT. AND IT APPEARS TO
10 ME THE INTENT OF THE ACT IS TO USE A HEIGHT OF PERHAPS FIVE
11 FEET ABOVE THE HOUSEHOLDER'S ROOFTOP.

12 Q. OKAY. I WOULD LIKE TO GO BACK TO THE ELEMENTS THAT YOU
13 HAVE LAID OUT NOW A LITTLE BIT.

14 YOU'VE TALKED ALREADY ABOUT INTERFERENCE AND I'M
15 NOT GOING TO DWELL ON THAT. YOU'VE ALSO TALKED SOMEWHAT
16 ABOUT LOCATIONAL VARIABILITY, IN FACT, THAT MR. COHEN
17 UTILIZED 50 PERCENT. AND I DON'T, IN THE INTERESTS OF TIME,
18 I DON'T WANT YOU TO REPEAT WHAT YOU'VE SAID ABOUT THAT THUS
19 FAR.

20 BUT LET ME ASK, IF I UNDERSTAND CORRECTLY, THAT AS
21 YOU UNDERSTAND IT, MR. COHEN, BY NOT INVOKING THE LOCATION
22 VARIABILITY PARAMETERS IN THE PROGRAM, USED A 50 PERCENT
23 LIKELIHOOD OF -- OR 50 PERCENT LIKELIHOOD, IN EFFECT. AND,
24 THEREFORE, THAT IF ONE RETURNS TO THE THEORETICAL 100 HOMES
25 THAT ARE IN A CELL WHERE PREDICTION IS MADE, MR. COHEN,

1 A. I BELIEVE SHE DOES. I CAN QUOTE A SINGLE STATEMENT.

2 Q. WOULD YOU?

3 A. SHE SAYS:

4 "THE PROBLEMS ENCOUNTERED IN PROPAGATION IN
5 AN URBAN ENVIRONMENT CONTAIN TOO MANY UNKNOWN
6 ELEMENTS FOR A COMPLETE THEORETICAL MODELING."

7 Q. CAN YOU TELL US WHAT "MULTIPATH FADING" IS?

8 A. WELL, WHAT "MULTIPATH FADING" IS?

9 Q. YES.

10 A. IN A NUTSHELL, IT'S THAT WILDLY VARIABLE SIGNAL THAT I
11 TRIED TO SKETCH EARLIER.

12 Q. DOES MISS LONGLEY HAVE ANY OBSERVATIONS ABOUT MULTIPATH
13 FADING IN AN URBAN ENVIRONMENT? AND I DIRECT YOUR ATTENTION
14 AGAIN TO PAGE THREE.

15 A. LET'S SEE.

16 Q. AND THE BEGINNING OF THE FIRST FULL PARAGRAPH.

17 A. YES. THE LAST SENTENCE IN THE FIRST PARAGRAPH, FULL
18 PARAGRAPH IS, I QUOTE:

19 "THIS MULTIPATH INTERFERENCE CAUSES THE
20 SIGNAL TO FADE RAPIDLY AND DEEPLY AND CAN BE A
21 SERIOUS PROBLEM IN A HIGHLY BUILT-UP AREA WHERE A
22 LARGE NUMBER OF PROPAGATION PATHS MAY BE FORMED."

23 Q. AND DOES SHE REFER TO A 30 D.B. LOSS AS BEING QUITE
24 COMMON?

25 A. (NO RESPONSE.)

1 A. REALIZE THAT THE USE OF MY VERSION OF LONGLEY-RICE IS
2 NOT RESTRICTED TO TELEVISION AND F.M. BROADCAST. EXTENSIVE
3 USE HAS BEEN MADE BY THE PUBLIC SAFETY COMMUNITY THAT USES A
4 VARIETY OF FREQUENCIES, MANY OF WHICH ARE HIGHER THAN MOST
5 TELEVISION; AND ALSO THE CELLULAR BUSINESS, WHICH USES
6 FREQUENCIES ABOVE THE U.H.F. T.V. BAND. REALIZING THAT
7 BROAD SPECTRUM OF APPLICATIONS, I BELIEVE 32 DECIBELS IS A
8 CORRECTION FACTOR AT CELLULAR FREQUENCIES FOR A DENSE PINE
9 WOOD. THAT'S A FACTOR OF MORE THAN A THOUSAND TO ONE, IN
10 TERMS OF EQUIVALENT SIGNAL LOSS.

11 Q. DO YOU HAVE ANY ESTIMATES OF THE ATTENUATION OR SIGNAL
12 LOSS AT TELEVISION BROADCAST FREQUENCIES?

13 A. DISTINGUISHING THE FACT THAT LOSS, MEANING THE MEDIAN
14 LOSS OF SIGNAL STRENGTH, NOT DISCUSSING FOR THE MOMENT THE
15 VARIABILITY CREATED BY THE MORPHOLOGY, I WOULD ESTIMATE THAT
16 AT LOW V.H.F. CHANNEL 2, TYPICAL URBAN ENVIRONMENT WITH A
17 LOT OF SHADE TREES, YOU'RE ON THE ORDER OF 12 DECIBELS. AND
18 AT THE UPPER END OF THE U.H.F. SPECTRUM IN PINEY WOODS,
19 YOU'RE GETTING UP TO THE UPWARD 32 DECIBELS THAT I MENTIONED
20 A MINUTE AGO.

21 Q. OKAY. AND DO YOU RECALL MR. COHEN SAYING THAT HE
22 AGREED THAT IF ONE COULD TAKE INTO ACCOUNT BUILDINGS AND
23 VEGETATION, THAT WOULD BE PREFERABLE TO NOT DOING SO?

24 A. I DO.

25 Q. NOW, LAST, BEFORE WE MOVE TO THE WORK THAT YOU